

WHAT IS CLAIMED IS:

1. A webbing winding device comprising:

a winding shaft, at which a base end of a long belt-form webbing belt for restraining a body of a vehicle occupant is anchored, and which rotates in a winding direction around a shaft center thereof for winding the webbing belt at an outer peripheral portion thereof, and rotates in a drawing out direction, which is opposite to the winding direction, when the webbing belt is drawn out;

an input gear which is mechanically coupled to the winding shaft, the input gear rotating for rotating the winding shaft, and a plurality of teeth being formed at an outer peripheral portion of the input gear;

a motor side rotating body directly or indirectly coupled to a driving section, the motor side rotating body rotating by receiving driving force of the driving section;

at least one first coupling member which rotates about an axis of the input gear in conjunction with rotation of the motor side rotating body, and is moveable toward and away from the teeth of the input gear in conjunction with rotation of the motor side rotating body one way about an axis thereof, the first coupling member meshing with the input gear by moving toward the teeth, transmitting the rotation the one way about the axis of the motor side rotating body to the input gear, and rotating the input gear in the winding direction; and

at least one second coupling member which rotates about the axis of the input gear in conjunction with the rotation of the motor side rotating body, and is moveable toward and away from the teeth of the input gear in conjunction with rotation of the motor side rotating body the other way about the axis

thereof, the second coupling member meshing with the input gear by moving toward the teeth, transmitting the rotation the other way about the axis of the motor side rotating body to the input gear, and rotating the input gear in the drawing out direction.

2. The webbing winding device of claim 1, further comprising:

an inertial mass body provided to be coaxial and relatively rotatable with respect to the motor side rotating body, the first coupling member and the second coupling member being supported at the inertial mass body to be moveable toward and away from the input gear;

coupling compelling portions integrally provided at the inertial mass body, the coupling compelling portion moving the first coupling member toward the teeth of the input gear in conjunction with relative rotation, with respect to the motor side rotating body, of the inertial mass body the other way about the axis of the motor side rotating body, and moving the second coupling member toward the teeth of the input gear in conjunction with relative rotation, with respect to the motor side rotating body, of the inertial mass body the one way about the axis of the motor side rotating body; and

an urging section for, in accordance with the rotation of the motor side rotating body, urging the inertial mass body in the direction of the rotation of the motor side rotating body and causing the inertial mass body to rotate to follow the motor side rotating body.

3. The webbing winding device of claim 1, wherein

the motor side rotating body is a substantially ring-like external gear, the

external gear being axially supported at the winding shaft to be coaxially relatively rotatable with respect to the winding shaft, a plurality of outward teeth being formed at an outer peripheral portion of the external gear, and the external gear being directly or indirectly connected to a drive gear which is rotated by the driving force of the driving section,

the input gear is disposed at an inner side of the external gear and coaxially and integrally coupled with the winding shaft, the teeth of the input gear being formed at an outer peripheral portion of the input gear, and

the external gear supports the first and the second coupling members, to be moveable toward and away from the input gear, between the external gear and the input gear in a radial direction of the external gear.

4. The webbing winding device of claim 1, wherein

the motor side rotating body is a substantially ring-like external gear, the external gear being axially supported at the winding shaft to be coaxially relatively rotatable with respect to the winding shaft, a plurality of outward teeth being formed at an outer peripheral portion of the external gear, and the external gear being directly or indirectly connected to a drive gear which is rotated by the driving force of the driving section,

the input gear is disposed at an inner side of the external gear and coaxially and integrally coupled with the winding shaft, the teeth of the input gear being formed at an outer peripheral portion of the input gear, and

the external gear supports the first and the second coupling members, to be moveable toward and away from the input gear, between the external gear and the input gear in a radial direction of the external gear.

5. The webbing winding device of claim 2, wherein the first coupling member is provided with a first coupling plate for meshing with the tooth of the input gear and a first release plate for releasing meshing of the tooth of the input gear and the first coupling plate, and the second coupling member is provided with a second coupling plate for meshing with the tooth of the input gear and a second release plate for releasing meshing of the tooth of the input gear and the second coupling plate.

6. The webbing winding device of claim 5, wherein protruding direction of the first coupling plate is substantially opposite to that of the second coupling plate in a circumference direction of the motor side rotating body, and protruding direction of the first releasing plate is substantially opposite to that of the second releasing plate in the circumference direction.

7. The webbing winding device of claim 5, wherein the first coupling plate is provided with a first inclined surface inclining with respect to the circumference direction toward a radial direction of the motor side rotating body, and the second coupling plate is provided with a second inclined surface inclining with respect to the circumference direction toward the radial direction,

the first coupling plate meshes with the tooth of the input gear due to a first coupling compelling portion relatively pressing the first inclined surface in a webbing drawing direction, and the second coupling plate meshes with the tooth of the input gear due to a second coupling compelling portion relatively

pressing the second inclined surface in a webbing winding direction.

8. The webbing winding device of claim 1, wherein the device is provided with a pair of first coupling members and a pair of second coupling members.

9. The webbing winding device of claim 8, wherein the plurality of teeth are formed at the outer peripheral portion of the input gear by a constant pitch, number of the teeth being set to an odd number,

when one of the first coupling members abuts on one of the teeth of odd number, the other of the first coupling members does not abut on another of the teeth of odd number, and

when one of the second coupling members abuts on one of the teeth of odd number, the other of the second coupling members does not abut on another of the teeth of odd number.

10. A webbing winding device comprising:

a winding shaft, at which a base end of a long belt-form webbing belt for restraining a body of a vehicle occupant is anchored, and which rotates in a winding direction around a shaft center thereof for winding the webbing belt at an outer peripheral portion thereof, and rotates in a drawing out direction, which is opposite to the winding direction, when the webbing belt is drawn out;

an input gear which is mechanically coupled to the winding shaft, the input gear rotating for rotating the winding shaft, and a plurality of teeth being formed at an outer peripheral portion of the input gear;

a motor side rotating body directly or indirectly coupled to a driving

section, the motor side rotating body rotating by receiving driving force of the driving section;

at least one first coupling member which rotates about an axis of the input gear in conjunction with rotation of the motor side rotating body, and is moveable toward and away from the teeth of the input gear in conjunction with rotation of the motor side rotating body one way about an axis thereof, the first coupling member meshing with the input gear by moving toward the teeth, transmitting the rotation the one way about the axis of the motor side rotating body to the input gear, and rotating the input gear in the winding direction;

at least one second coupling member which rotates about the axis of the input gear in conjunction with the rotation of the motor side rotating body, and is moveable toward and away from the teeth of the input gear in conjunction with rotation of the motor side rotating body the other way about the axis thereof, the second coupling member meshing with the input gear by moving toward the teeth, transmitting the rotation the other way about the axis of the motor side rotating body to the input gear, and rotating the input gear in the drawing out direction;

an inertial mass body provided to be coaxial and relatively rotatable with respect to the motor side rotating body, the first coupling member and the second coupling member being supported at the inertial mass body to be moveable toward and away from the input gear;

coupling compelling portions integrally provided at the inertial mass body, the coupling compelling portion moving the first coupling member toward the teeth of the input gear in conjunction with relative rotation, with respect to the motor side rotating body, of the inertial mass body the other way about the axis

of the motor side rotating body, and moving the second coupling member toward the teeth of the input gear in conjunction with relative rotation, with respect to the motor side rotating body, of the inertial mass body the one way about the axis of the motor side rotating body; and

an urging section for, in accordance with the rotation of the motor side rotating body, urging the inertial mass body in the direction of the rotation of the motor side rotating body and causing the inertial mass body to rotate to follow the motor side rotating body.